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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,130	02/05/2002	Olga Bandman	PF-0319-2 DIV	2603

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Legal Department
Incyte Genomics Inc
3160 Porter Drive
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EXAMINER	
STEADMAN, DAVID J	

ART UNIT	PAPER NUMBER
1652	9

DATE MAILED: 08/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/072,130	BANDMAN ET AL.	
	Examiner	Art Unit	
	David J Steadman	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 June 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,11,12 and 29-45* is/are pending in the application.

4a) Of the above claim(s) *1,12,29,30,33,35,44 and 45* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11,31,32,34,42 and 43* is/are rejected.

7)☒ Claim(s) *36-41* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Application Status

[1] Claims 1, 11, 12, and 29-45 are pending in the application.

[2] Applicant's amendment to claims 11 and 39 in Paper No. 8, filed June 11, 2003, is acknowledged.

[3] Claims 1, 12, 29, 30, 33, 35, 44, and 45 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a non-elected invention, there being no allowable generic or linking claim.

[4] Claims 11, 31, 32, 34, and 36-43 are being examined on the merits.

[5] Applicant's arguments presented in Paper No. 8 have been fully considered and are deemed to be persuasive to overcome some of the rejections previously applied. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn.

[6] The text of those sections of Title 35 U.S. Code not included in the instant action can be found in a prior Office action.

Oath/Declaration

[7] The objection to the declaration in item 2 of the Office action of Paper No. 6 is maintained for the reasons of record. Applicant acknowledges the objection and states that action is being taken to obtain a newly executed copy of the declaration.

Claim Rejections - 35 USC § 112, First Paragraph

[8] The written description rejection of claims 11, 31, 32, 34, 42, and 43 under 35 U.S.C. 112, first paragraph, is maintained for the reasons of record and the reasons stated below. The rejection was fully explained in a previous Office action (see item 7 of Paper No. 6). Applicant's arguments are summarized and rebutted as follows. For applicant's convenience, the examiner's rebuttal of applicant's arguments will maintain the format as used by applicant in Paper No. 8.

Beginning at page 11 of Paper No. 8, applicant summarizes the examiner's rejection. Applicant states the written description standard is fulfilled by both what is specifically disclosed and what is conventional or well known to a skilled artisan. Applicant cites case law and the Written Description Guidelines in support of their statement.

A. The specification does not provide an adequate written description of the structure of the genus of polypeptides to which the claimed genus of antibodies binds

Beginning at page 12 of Paper No. 8, applicants argue the claimed subject matter is either disclosed or is conventional or well known to a skilled artisan. Applicants provide alleged support for the variants and fragments as encompassed by the claims. Applicants argue that a skilled artisan would recognize polypeptide sequences that are naturally occurring variants that are at least 90% identical to SEQ ID NO:1. Applicant argues that given a naturally occurring polypeptide sequence, it would be routine for a skilled artisan to recognize whether it is a variant of SEQ ID NO:1 and to determine whether such variant has phosphatase activity. Based on this alleged "routine recognition", applicant concludes that the specification provides an adequate description of the claimed variants of SEQ ID NO:1. Applicant's argument is not found persuasive.

The specification provides only *a single representative species* of the claimed genus of antibodies, i.e., an antibody that binds SEQ ID NO:1. For claims drawn to a genus, MPEP § 2163 states the written description requirement for a claimed genus may be satisfied through sufficient description of a *representative number of species* by actual reduction to practice, reduction to drawings, or by disclosure of relevant, identifying characteristics, i.e., structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the claimed genus. See *Eli Lilly*, 119 F.3d at 1568, 43 USPQ2d at 1406. MPEP § 2163 states that a representative number of species means that the species which are adequately described are representative of the entire genus. Thus, when there is substantial variation within the genus, one must describe a sufficient variety of species to reflect the variation within the genus. Other than the *single*

representative species as described above, the specification fails to describe any additional representative species of the claimed genus. While MPEP § 2163 acknowledges that in certain situations "one species adequately supports a genus", it is also acknowledges that "[f]or inventions in an unpredictable art, adequate written description of a genus which embraces widely variant species cannot be achieved by disclosing only one species within the genus". In the instant case, the claimed genus of antibodies encompasses species that bind to polypeptides that are widely variant in both structure and function, including (but not limited to) functional and non-functional allelic variants and polypeptides having function other than phosphatase activity. As such, the disclosure of the single representative species of an antibody that binds SEQ ID NO:1 is insufficient to be representative of the attributes and features of *all* species encompassed by the claimed genus. Applicant's alleged supporting description of variants of SEQ ID NO:1 merely provides a textual description of said variants without providing any structural features of the species encompassed by the genus. As such, a skilled artisan would *not* be able to visualize the structure of each member of the claimed genus. Furthermore, because there is no functional limitation provided for the variants of SEQ ID NO:1, one of skill in the art would recognize that the claimed genus of variants encompasses species having substantial variation of function within the genus. One of skill in the art would recognize that such variants encompass polypeptides having *any* activity, including non-functional polypeptides and polypeptides having a function other than phosphatase activity. When there is substantial variation within a genus, as is the instant case, one must describe a sufficient variety of species to reflect the variation within the genus. The single representative species of an antibody that binds SEQ ID NO:1 fails to describe the entire genus of claimed antibodies.

1. **The present claims do not define the claimed genus through the recitation of chemical structure.**

Beginning at page 13 and continuing through page 15 of Paper No. 8, applicant summarizes case law citing *Fiers v. Revel*, 25 USPQ2d 1601, 1606 (Fed Cir 1993) and *University of California v. Eli Lilly and Co.*, 43 USPQ2d 1398, 1406 (Fed Cir 1997) as court cases in which the recitation of functional characteristics of a DNA, without description of structural features has been a basis by which the courts

have found invalid claims to DNA. Applicant argues the claims at issue are in contrast to the claims of the *Lilly* and *Fiers* cases as applicant alleges the claimed genus of antibodies is defined by structure (of the polypeptide to which they bind) rather than function. Applicant argues there is no reliance solely on functional characteristics of the claimed antibodies. Applicant argues the Office has failed to base the written description inquiry "on whatever is now claimed" and fails to provide an appropriate analysis of the instant claims and how they differ from those of the *Lilly* and *Fiers* cases. Applicant's arguments are not found persuasive.

While it is acknowledged that the current claims differ from those of the *Lilly* and *Fiers* cases, as discussed in the written description Guidelines and MPEP § 2163, the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by actual reduction to practice, reduction to drawings, or by disclosure of relevant, identifying characteristics, i.e., structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show applicants were in possession of the claimed genus. A representative number of species means that the species that are adequately described are representative of the entire genus. The specification discloses *only* a single representative species of the claimed genus, i.e., SEQ ID NO:1. Furthermore, as stated above, there is *substantial* variation within the structure AND function of the genus of polypeptides to which the claimed antibody binds. When there is substantial variation within the genus, one must describe a sufficient variety of species to reflect the variation within the genus. At the time of the invention, one of skill in the art would recognize the absence of the ability to predict the function(s) of all species of polypeptides encompassed by genus of the claims. For inventions in an unpredictable art, adequate written description of a genus that embraces widely variant species cannot be achieved by disclosing only one species within the genus. As described above, one of skill in the art would recognize that the genus of variants of SEQ ID NO:1 encompasses species having *substantial* variation of both structural AND functional features. As such, neither the description of the structure and function of SEQ ID NO:1 nor the disclosure of solely structural features

present in all members of the genus is sufficient to be representative of the attributes and features of the entire genus of claimed antibodies.

2. The present claims define a genus which is highly variant.

Beginning at page 15 of Paper No. 8, applicant argues the claims do not describe a genus that is highly variant. Applicant argues that available evidence indicates that the claimed genus is of narrow scope. In support of applicant's assertion, they rely on the teachings of Brenner et al. (*Proc Natl Acad Sci USA* 95:6073-6078; cited by applicant). Applicant argues that, based on the teachings of Brenner et al., naturally-occurring molecules may exist that could be characterized as PROPHO proteins with only 40% identity over 70 amino acid residues of SEQ ID NO:1. Applicant argues the claims recite, e.g., antibodies that specifically bind to a naturally occurring amino acid sequence with at least 90% identity to SEQ ID NO:1, which has 479 amino acids. Applicant asserts this variation is far less than those PROPHO proteins having as little as 30% identity over at least 150 residues of SEQ ID NO:1. Applicant's argument is not found persuasive.

Applicant improperly attempts to apply the teachings of Brenner et al. (*Proc Natl Acad Sci USA* 95:6073-6078) to support their argument. Brenner et al. (*Proc Natl Acad Sci USA* 95:6073-6078) clearly state that their comparisons "have been assessed **using proteins whose relationships are known reliably from their [three dimensional] structures and functions**, as described in the SCOP database" (page 6073, abstract). Murzin et al. (*J Mol Biol* 247:536-540) teach that the proteins of the SCOP database have been characterized both in their three dimensional structures AND their function. In the instant case, the polypeptide of SEQ ID NO:1 has not been characterized by either of these methods. In fact, the function of the polypeptide of SEQ ID NO:1 has been assigned based solely on its amino acid sequence – not on its three dimensional structure or its alleged phosphatase function. The specification provides no disclosure of the three dimensional structure of the polypeptide of SEQ ID NO:1 or an empirical activity assay such that the teachings of Brenner et al. (*Proc Natl Acad Sci USA* 95:6073-6078) could be applied to the polypeptide of SEQ ID NO:1. Brenner et al. (*Proc Natl Acad Sci USA* 95:6073-6078) compare amino acid sequences of *functional* polypeptides encoded by genes at *different* loci and

suggest that 30 % sequence identity between polypeptides having the aforementioned characteristics, i.e., functional polypeptides encoded by genes at different loci, can be used to propose functional similarity of the polypeptides. However, Brenner et al. (*Proc Natl Acad Sci USA* 95:6073-6078) clearly DOES NOT suggest that *all* amino acid sequences with at least 40 % identity over 75 amino acids to another amino acid sequence will share a similar function. Instead, Brenner (*Trends in Genetics* 15:132-133) discloses his opinion of functional prediction of a polypeptide *based solely on amino acid sequence* by teaching that it is impossible to know the accuracy of functional assignment without empirical laboratory evidence (page 132, left column, second paragraph), which it is noted, has not been provided in the specification. Also, it is well known in the art that highly homologous proteins can have distinct functions. As supporting evidence, the examiner provides the reference of Scott et al. (*Nat Genet* 21:440-443) who teach a polypeptide that has 45 % sequence identity with a human sulfate transporter and that, based on structural homology has been proposed to function as a sulfate transporter (page 440, left column, abstract). However, an empirical analysis of the protein measuring its ability to transport various ions revealed the protein is actually a chloride-iodide transport protein (page 441, left column, third full paragraph). Scott et al. "conclude that pendrin does not function as a sulfate transporter, as suggested by its close homology to other sulfate transporters, but instead functions as a sodium-independent transporter of chloride and iodide and state that their result shows the importance of confirming the function of a protein even when the protein shares significant homology to proteins of known function (emphasis added; page 441, left column, third full paragraph). It is noted that applicant's claims are drawn to an antibody binding a naturally occurring polypeptide at least 90% identity to SEQ ID NO:1. The examiner provides the reference of Seffernick et al. (*J Bacteriol* 183:2405-2410). Seffernick et al. teach two polypeptides having distinct functions, yet that share 98% amino acid sequence identity (page 2407, right column, middle). While Seffernick et al. characterize their finding as "exceptional" (page 2409, left column, middle), this nonetheless provides evidence that polypeptides, even those sharing significant identity, do not necessarily share function as asserted by applicant.

3. Advances in the state of the art from the time of *Lilly* and *Fiers* do not obviate the requirement for adequate written description.

Beginning at page 16 of Paper No. 8, applicant argues the state of the art at the time of the invention is further advanced than at the time of the *Lilly* and *Fiers* cases. Applicant argues the techniques and technological advances since the *Lilly* and *Fiers* cases up to the filing of the instant application in combination with the teachings provided in the instant specification are such that one of skill in the art would recognize that applicant was in possession of the claimed antibodies. Applicant's arguments are not found persuasive. While advances in the art are undeniable and widely recognized, the rejection is directed to the lack of adequate written description and not lack of an enabling disclosure. Even with such advances, the state of the art still does not allow one of skill in the art to predict the structure and function of a naturally-occurring variant of a polypeptide based solely on a single disclosed amino acid sequence – see for example, Seffernick et al. and Scott et al. as described above. Most importantly, one skilled in the art would not be able to divine the function(s) of other naturally-occurring protein sequences based on the knowledge of the asserted (yet unconfirmed) function of only one disclosed species. For inventions in an unpredictable art, adequate written description of a genus that embraces widely variant species cannot be achieved by disclosing only one species within the genus.

B. In this case, a description of the function of the polypeptides is required to satisfy the written description requirement

Applicant argues (page 17 of Paper No. 8) disclosure of functional features is merely one of the factors that can be used as evidence of possession. Applicant argues that for the reasons presented in A(1)-A(3), the genus of claimed antibodies are adequately described. Applicant's argument is not found persuasive. The examiner acknowledges that polypeptide function is not required to satisfy the written description requirement. MPEP § 2163 states the written description requirement for a claimed genus may be satisfied through sufficient description of a *representative number of species* by actual reduction to practice, reduction to drawings, or by disclosure of relevant, identifying characteristics, i.e., structure or other physical and/or chemical properties, by functional characteristics coupled with a known or

disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the claimed genus. See *Eli Lilly*, 119 F.3d at 1568, 43 USPQ2d at 1406. In this case neither the description of the structure and function of SEQ ID NO:1 nor the disclosure of solely structural features present in all members of the genus is sufficient to be representative of the attributes and features of the entire genus of claimed antibodies. In this case, the species of antibodies encompassed by genus of the claims includes antibodies that bind polypeptides whose structures and functions have not been disclosed in the specification and the single representative species of SEQ ID NO:1 fails to represent the entire genus of variant polypeptides to which the antibody binds. MPEP § 2163 states, "[f]or inventions in an unpredictable art, adequate written description of a genus which embraces widely variant species cannot be achieved by disclosing only one species within the genus". The claimed genus of antibodies encompasses species that bind to polypeptides that are widely variant in both structure and function, including (but not limited to) functional and non-functional allelic variants and polypeptides having function other than PROPHO activity. As such, the disclosure of the structure and function of the single representative species of an antibody that binds SEQ ID NO:1 is insufficient to be representative of the attributes and features of *all* species encompassed by the claimed genus.

[9] The scope of enablement rejection of claims 11, 31, 32, 34, 42, and 43 under 35 U.S.C. 112, first paragraph, is maintained for the reasons of record and the reasons stated below. The rejection was fully explained in a previous Office action (see item 8 of Paper No. 6). Applicant's arguments are summarized and rebutted as follows. For applicant's convenience, the examiner's rebuttal of applicant's arguments will maintain the format as used by applicants in Paper No. 8.

Beginning at page 18 of Paper No. 8, applicant argues the variant polypeptides of claim 11 are disclosed in the specification and the variants are "naturally-occurring". Applicant argues it is routine experimentation to obtain those antibodies that bind the recited variants. Applicant argues the specification teaches methods of using the entire scope of claimed antibodies for any of the recited

polypeptides. Applicant argues that given the information provided by SEQ ID NO:1, one of skill in the art would routinely be able to use antibodies that bind to the recited variants and provide the example of the antibody being used as an affinity reagent for protein purification. Applicant argues the examiner has failed to provide any reasons why one would doubt the guidance provided by the specification would enable one to make and use the claimed antibody without undue experimentation according to the "standard" set forth in *In re Marzocchi*, 169 USPQ 367, 369 (CCPA 1971) and has not established a *prima facie* case of non-enablement. Applicant's arguments are not found persuasive.

Contrary to applicant's assertion, the examiner provided numerous reasons why applicant has not enabled the entire scope of claimed antibodies (see item 8 of Paper No. 6). The examiner demonstrated, according to the Factors of *In re Wands* 858 F.2d 731, 8 USPQ 2nd 1400 (Fed. Cir. 1988), why undue experimentation would be required to make and use the entire scope of claimed antibodies. Factors to be considered in determining whether undue experimentation is required, are summarized in *In re Wands* (858 F.2d 731, 8 USPQ 2nd 1400 (Fed. Cir. 1988)) as follows: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claim(s). In order to reiterate the examiner's position, those Factors most relevant to the instant rejection are addressed below.

- The breadth of the claims: the claims are so broad as to encompass *all* antibodies that bind *all* polypeptides comprising a naturally-occurring amino acid sequence that is at least 90 % identical to SEQ ID NO:1. Thus, the scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of antibodies broadly encompassed by the claims. In this case, the disclosure is enabling only for an antibody that binds SEQ ID NO:1.
- The lack of guidance and working examples: the specification provides *a single working example* of the broad scope of claimed antibodies. The specification provides no further guidance as to other antibodies that bind variant polypeptides as recited in claim 11 or the structures of variant polypeptides

that may be used to generate such antibodies. In fact, the scope of claimed antibodies is so broad as to encompass antibodies that bind epitopes that are not similar to amino acid sequences found within SEQ ID NO:1 or are not even present in SEQ ID NO:1. The prior art teaches that as few as six to ten amino acids are required for sufficient antibody/epitope binding (see for example, Harlow et al. "Antibodies, A Laboratory Manual", page 76, Cold Spring Harbor Laboratory, 1988). The claimed antibodies are required to bind to polypeptides that have 90% identity to SEQ ID NO:1. Therefore, any naturally-occurring polypeptide that has an insertion of as few as six to ten amino acids represents a polypeptide that can elicit an antibody that binds an epitope that is not present in SEQ ID NO:1.

- The unpredictability of the art and the state of the art: The amino acid sequence of an epitope determines an antibody's specificity and it is *highly* unpredictable as to which changes in a given epitope can be tolerated and obtain an antibody that maintains binding to SEQ ID NO:1. Even a single amino acid alteration in given sequence may disrupt antibody binding to a specific epitope. For example, Seffernick et al. (*J Bacteriol* 183:2405-2410) teach two naturally occurring polypeptides that share 98% amino acid identity that have differences in sequence such that an antibody that binds one of the polypeptides may not bind the other.
- The amount of experimentation required: While polypeptide and encoding polynucleotide isolation techniques are known, it is not routine in the art to screen for all naturally occurring polypeptide variants as encompassed by the instant claims and to further generate antibodies to those polypeptide variants as encompassed by the instant claims. In view of the broad scope of claimed antibodies, the lack of guidance provided by the specification, and the unpredictability of the art, an undue amount of experimentation would be required for a skilled artisan to make and/or use the claimed nucleic acids and array.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims broadly including all nucleic acids and the array as described above. The scope of the claims must bear a reasonable correlation with the scope of enablement (*In re* Fisher, 166 USPQ 19 24 (CCPA 1970)).

Without sufficient guidance, determination of having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See *In re* Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988).

Conclusion

[10] Status of claims:

- Claims 1, 11, 12, and 29-45 are pending.
- Claims 1, 12, 29, 30, 33, 35, 44, and 45 are withdrawn from consideration.
- Claims 11, 31, 32, 34, 42, and 43 are rejected.
- Claims 36-41 are objected to as being dependent upon a rejected base claim, but would appear to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
- No claim is in condition for allowance.

Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Steadman, whose telephone number is (703) 308-3934. The Examiner can normally be reached Monday-Thursday from 6:30 am to 5:00 pm. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Ponnathapura Achutamurthy, can be reached at (703) 308-3804. The FAX number for this Group is (703) 308-4242. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Art Unit receptionist whose telephone number is (703) 308-0196.

David J. Steadman, Ph.D.
Patent Examiner
Art Unit 1652

REBECCA E. PROUTY
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